

WHAT IS CLAIMED IS:

1 1. A system for indicating the location of an energy zone on an object surface,
2 with the energy zone being an area on the object surface that is imaged onto an IR detector by
3 the IR optical system included in a non-contact IR thermal measurement device, said system
4 comprising:

5 a video sub-system for displaying an image of at least a part of the object
6 surface;

7 a range-finding sub-system for measuring the distance between the non-
8 contact IR thermal measurement device and the object surface and outputting a distance
9 signal indicating a measured distance; and

10 an optical overlay sub-system, coupled to the range-finding sub-system, for
11 overlaying a shape outline, having a dimension determined by a received measured distance,
12 over a displayed image of the object surface and with the shape outline indicating the extent
13 of a displayed image included in the energy zone.

1 2. The system of claim 1 where the range-finding sub-system comprises:
2 a laser diode for emitting a laser-beam along a first optical axis;
3 a position-sensitive photodiode, having a major surface and displaced from the
4 first optical axis, for receiving a portion of the laser beam reflected from the object surface
5 and indicating the position of a reflected portion on the major surface.

1 3. The system of claim 2 where the first axis is substantially coincident with
2 the optical axis of the IR optical system so that the laser beam indicates the center of the
3 energy zone.

1 4. The system of claim 1 where the video-subsystem comprises:
2 a digital image generating chip for outputting digital image data, a display
3 device for displaying digital image data, and an image controller chip for controlling the
4 display device to display digital image data provided by the image generating chip;

5 and where the optical overlay subsystem includes:

6 a storage device for storing circle data utilized to form circle images of
7 different diameters;

8 and with the image controller coupled to the storage device and the range-
9 finding sub-system, programmed to select circle data from the storage device for generating

10 a circle having a diameter size determined by the measured distance provided by the range-
11 finding sub-system.

1 5. The system of claim 1 where the shape outline is a circle.

1 6. A method for indicating the location of an energy zone on an object
2 surface, with the energy zone being an area on the object surface that is imaged onto an IR
3 detector by the IR optical system included in a non-contact IR thermal measurement device,
4 said method comprising steps of:

5 acquiring a digital image of the object surface;
6 displaying a digital image of the object surface;
7 measuring the distance to the object surface to obtain a distance value;
8 forming a geometrical shape indicating the portion of the object surface
9 indicating the portion of the object surface included in the energy zone; and
10 overlaying the geometrical shape over the digital image of the object surface
11 to indicate the location of the energy zone.

1 7. The method of claim 6 where the step of forming a geometrical image
2 further comprises the step of:

3 compensating for parallax between the acquired digital image and an optical
4 axis of the IR optical system.

1 8. A system for indicating the location of an energy zone on an object surface,
2 with the energy zone being an area on the object surface that is imaged onto an IR detector by
3 the IR optical system included in a non-contact IR thermal measurement device, said system
4 comprising:

5 means for acquiring a digital image of the object surface;
6 means for displaying a digital image of the object surface;
7 means for measuring the distance to the object surface to obtain a distance
8 value;
9 means for forming a geometrical shape indicating the portion of the object
10 surface indicating the portion of the object surface included in the energy zone; and
11 means for overlaying the geometrical shape over the digital image of the
12 object surface to indicate the location of the energy zone.

1 9. The system of claim 8 where the means for forming a geometrical image
2 further comprises:

3 means for compensating for parallax between the acquired digital image and
4 an optical axis of the IR optical system.